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AMENDMENTS TO THE CLAIMS

Please amend claim 8 and add new claims 30-34. This listing of claims will replace all prior versions, and listings, or claims in the application:

Listing Of Claims:

1.   (original)   A communication controller comprising:

a memory circuit;

a processor operable in response to data and instructions stored in the memory circuit;

a first communication circuit under control of the processor for communicating between the communication controller and a first remote device according to a first data communication standard; and

a second communication circuit under control of the processor for communicating between the communication controller and a second remote device according to a second data communication standard, the second data communication standard being different from the first data communication standard.

2.   (original)   The communication controller of claim 1 wherein the memory circuit, the processor, the first communication circuit and the second communication circuit are integrated in a single integrated circuit.

3.   (original)   The communication controller of claim 1 wherein the first communication circuit comprises a ProfiBus communication circuit.

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4.   (original)   The communication controller of claim 3 wherein the first communication circuit comprises a ProfiBus controller.

5.   (original)   The communication controller of claim 1 wherein the second communication circuit comprises an Ethernet bus controller.

6.   (original)   The communication controller of claim 1 wherein the second communication circuit comprises a Controller Area Network (CAN) bus controller.

7.   (original)   The communication controller of claim 6 wherein the CAN bus controller comprises a logic circuit configured to receive and transmit data according to the CAN standard.

8.   (currently amended)   The communication controller of claim 6 wherein the second communication circuit comprises two or more [[a]] Controller Area Network (CAN) bus controller circuits.

9.   (original)   The communication controller of claim 1 further comprising an Ethernet bus controller under control of the processor for communicating between the communication controller and a third remote device according to Ethernet data communication standard.

10.   (original)   The communication controller of claim 1 further comprising an asynchronous serial data communication circuit.

11.   (original)   The communication controller of claim 10 wherein the CAN bus controller comprises two or more asynchronous serial data communication circuits.

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12.   (original)   The communication controller of claim 9 further comprising an internal communication bus coupled to the processor, the first communication circuit, the second communication circuit and the Ethernet bus controller.

13.   (original)   The communication controller of claim 1 further comprising a Serial Peripheral Interconnect (SPI) bus controller.

14.   (original)   The communication controller of claim 1 wherein the memory circuit comprises:

a boot read only memory; and

read-write memory.

15.   (original)   The communication controller of claim 14 wherein the asynchronous serial data communication circuit comprises:

two or more programmable asynchronous serial data port.

16.   (original)   A data communication device comprising:

first communication means for external communication according to a first standard network communication protocol;

second communication means for external communication according to a second standard network communication protocol; and

processing means for data processing, the processing means including communication control means for controlling operation of the first communication means and the second communication means.

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17.   (original)   The data communication device of claim 16 wherein the first communication means comprises ProfiBus communication means for external communication according to ProfiBus communication protocol.

18.   (original)   The data communication device of claim 17 wherein the first communication means comprises a data communication circuit configured to implement one of Controller Area Network (CAN) bus data communication protocol and Ethernet data communication protocol.

19.   (original)   The data communication device of claim 18 wherein the processing means comprises:

a processor coupled to the first communication means and the second communication means; and

memory means for storing data and instructions for operation by the processor.

20.   (original)   The data communication device of claim 18 further comprising:

an interface means for serial communication with an external data source for loading at least a portion of the memory means upon initialization of the data communication device.

21.   (original)   An integrated circuit comprising:

a processor block which controls operation of the integrated circuit;

a memory block which stores data and instructions for use by the processor block;

a first data communication port;

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a ProfiBus control block coupled with the first data communication port;

a second data communication port;

a Controller Area Network (CAN) control clock coupled with the second data communication port; and

an internal bus coupling the processor block, the memory block the ProfiBus control block and the CAN control block.

22.   (original)   The integrated circuit of claim 21 further comprising: a second CAN control block coupled to the internal bus.

23.   (original)   The integrated circuit of claim 21 further comprising: an Ethernet control block coupled to the internal bus.

24.   (original)   A ProfiBus controller comprising:

a ProfiBus core;

a processor;

a memory;

at least one control circuit which controls wireline data communications according to a standard other than ProfiBus standard; and

an internal bus for internal data communications within the ProfiBus controller.

25.   (original)   The ProfiBus controller of claim 24 wherein the at least one control circuit comprises a Controller Area Network (CAN) bus controller.

26.   (original)   The ProfiBus controller of claim 24 wherein the at least one control circuit comprises two or more Controller Area Network (CAN) bus controllers.

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27.   (original)   The ProfiBus controller of claim 25 wherein the at least one control circuit comprises an Ethernet bus controller.

28.   (original)   The ProfiBus controller of claim 27 wherein the processor comprises a serial communication port for external data communication.

29.   (original)   The ProfiBus controller of claim 28 further comprising:

program code stored in a first portion of the memory and executable by the processor for controlling loading of data and instructions from an external data source by the serial communication port to a second portion of memory.

30.   (new) A communication controller, fabricated on an integrated circuit, for communication between at least two devices, comprising:

a plurality of interface circuits comprising:

an Ethernet interface circuit for communication using an Ethernet communication standard;

a Serial Peripheral Interface circuit for communication using a Serial Peripheral Interface communication standard; and

a Controller Area Network interface circuit for communication using a Controller Area Network communication standard;

a processor for controlling the communication between the communication controller and a first device using a first interface circuit of the plurality of interface circuits and between the communication controller and a second device using a second interface circuit of the plurality of interface circuits, wherein the first interface circuit is different from the second interface circuit; and

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a memory circuit for storing operating instructions for execution by the processor and data, the memory comprising volatile and non-volatile memory.

31.   (new) A communication controller, fabricated on an integrated circuit, for communication between at least two devices, comprising:

an Ethernet interface circuit for communication using an Ethernet communication standard;

a Controller Area Network interface circuit for communication using a Controller Area Network communication standard;

a processor for controlling the communication between the communication controller and a first device using the Ethernet interface circuit and between the communication controller and a second device using the Controller Area Network interface circuit; and

a memory circuit for storing operating instructions for execution by the processor and data, the memory comprising volatile and non-volatile memory.

32.   (new) A communication controller, fabricated on an integrated circuit, for communication between at least two devices, comprising:

an Ethernet interface circuit for communication using an Ethernet communication standard;

a fieldbus interface circuit for communication using a fieldbus communication standard;

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a processor for controlling the communication between the communication controller and a first device using the Ethernet interface circuit and between the communication controller and a second device using the fieldbus interface circuit; and

a memory circuit for storing operating instructions for execution by the processor and data, the memory comprising volatile and non-volatile memory.

33.   (new) A communication controller, fabricated on an integrated circuit, for communication between at least two devices, comprising:

a plurality of interface circuits selected from the group consisting of an Ethernet interface circuit for communication using an Ethernet communication standard, a Serial Peripheral Interface circuit for communication using a Serial Peripheral Interface communication standard, a Controller Area Network interface circuit for communication using a Controller Area Network communication standard, and a fieldbus interface circuit for communication using a fieldbus communication standard, wherein at least two of the plurality of interface circuits are different;

a processor for controlling the communication between the communication controller and a first device using a first interface circuit of the plurality of interface circuits and between the communication controller and a second device using a second interface circuit of the plurality of interface circuits, wherein the first interface circuit is different from the second interface circuit; and

a memory circuit for storing operating instructions for execution by the processor and data, the memory comprising volatile and non-volatile memory.

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34.   (new) A communication controller for communication between at least two devices, comprising:

a processor; and

a memory for storing operating instructions for execution by the processor to control communication using a plurality of communication standards selected from the group consisting of an Ethernet communication standard, a Serial Peripheral Interface communication standard, a Controller Area Network communication standard, and a fieldbus communication standard,

wherein the processor controls communication between the communication controller and a first device using a first communication standard of the plurality of communication standards and between the communication controller and a second device using a second communication standard of the plurality of communication standards, where the first communication standard is different from the second communication standard.

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